TITLE: THE EFFECT OF CIGARETTE PAPER ADDITIVES IN VENTILATED CONSTRUCTIONS AND VENTILATION HOLE LOCATION ON SMOKE CHEMISTRY

AUTHOR: R. A. Hyde*

AFFILIATION: Celanese Fibers Marketing Company, P.O. Box 32414, Charlotte, NC 28232

ABSTRACT: As filter ventilation level increases, the burn rate of the cigarette decreases. Cigarette paper additives can be used to increase the burn rate, keeping it at a level that will be acceptable to the consumer. Cigarette paper, varying in citrate level from 0-3% were evaluated in ventilated constructions ranging in filter ventilation from 0-60%. It was determined that, for any filter ventilation level, there exists a percent cigarette paper citrate level that will maintain burn rate at a target value. To determine the effect of ventilation hole location on filter ventilation level, laser perforated tipping paper of a constant permeability was evaluated with hole location ranging from 11-19 mm from the mouth-end of the cigarette. It was determined that filter ventilation level increases as the perforations approach the mouth-end of the filter. The effects of ventilation hole location on smoke chemistry were evaluated by maintaining ventilation at a constant level and moving holes from 11-19 mm from the mouth-end of the cigarette.

REVIEW: The first half of this study developed a model to predict the effect of cigarette citrate level and filter ventilation on cigarette characteristics. As noted, increasing citrate level counteracts the effect of increased ventilation levels. Increasing citrate level from 0 to 3% decreased puff count when measured at equal dilution. This reduced total nicotine and tar delivery by 15%. Carbon monoxide increased at the 1% citrate level but decreased below control (0% citrate) at the 3% level. A model predicting cigarette pressure drop versus perforated tipping hole location was also developed. As expected, pressure drop, measured at constant ventilation, increased as the perforations were placed further from the mouthpiece. This change in perforation location also decreased tar and nicotine delivery by 25%. Vapor phase components remained constant.

-Reviewed by R. Rogers